**Course Handout**

General Handout for all courses appended to the time table

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| **Course No. : 19ECT561** | **Dept.: Electronics and Communication Engineering** |
| **Course Title :**  **Object Oriented Programming using C++** | **Semester: Vth** |
| **Instructor-in-charge : Mr.Kasetty Ram Babu,** [**ramkasetty@ncetmail.com**](mailto:ramkasetty@ncetmail.com) | **Academic Year: 2020-21** |
| **Lab. Instructor : No Lab** |  |

**Subject Description:**

This course covers the basics of object oriented programming and developing programs using C++. OOP ([object-oriented programming](https://www.educba.com/object-oriented-programming-in-java/)) is a programming paradigm that is completely based on ‘objects’. A general explanation of ‘object’ for better understanding – Mr. A is going to build a POT with the use of BLOCKS. Blocks are a kind of measurement units like height, radius, and shape by default. These properties are there by default, which means if you use a block it has some dimensions associated with it. Now there are some other crucial properties that are not yet assigned like – color, material, and price. So, Objects are nothing but POTS. We build an object by assigning values to the properties when we need them. BLOCK is nothing but the templates of the object. The purpose of this course is to develop the fundamental ideas of object oriented programming and to indicate where and how the theory can be applied.

**Text Books:**

**1.** Herbert Schildt: “The Complete Reference C++”, 4th Edition, Tata McGraw Hill, 2003,

ISBN 13: 9780070532465.

**2.** Object Oriented Programming with C++, E.Balaguruswamy, TMH, 6th Edition, 2013.

ISBN-978-1-25-902993-6

**REFERENCE BOOKS:**

**1.** Stanley B. Lippmann, Josee Lajore: “C++ Primer”, 4th Edition, Pearson Education, 2005, ISBN-10: 0-321-71411-3.

**2.** Paul J Deitel, Harvey M Deitel: “C++ for Programmers”, Pearson Education, 2009,ISBN-10: 0137059663

**PREREQUISITES:**

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| 1. Concepts of C programming. | Self-study | Remarks  Students have completed this Courses |

**LECTURE PLAN:**

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| **Topic** | **Topic Details** | **Number**  **of**  **Lectures** | **Unit/ Chapter**  **Reference** |
| **Module I**  **Introduction** | Origin of C++, features of OOP | 1 | T1 chapter 11 |
| Sample C++ program | 2 | T1 chapter 11 |
| Different data types, operators, expressions | 3 | T1 chapter 11 |
| implicit conversion, Type cast operator | 4 | T1 chapter 11 |
| statements, arrays and strings | 5 | T1 chapter 11 |
| pointers and user defined types | 6 | T1 chapter 11 |
| reference variable, memory management operator, name space, control structure | 7 | T1 chapter 11 |
| Function, default argument, inline functions, function, recursive functions | 8 | T1 chapter 11 |
| **Module II**  **Classes and Objects** | **Classes and Objects** | 9 | T1 chapter 12 |
| Classes, structures and classes are related | 10 | T1 chapter 12 |
| Friend functions, inline functions | 11 | T1 chapter 12 |
| function over loading | 12 | T1 chapter 12 |
| Constructors, Different types of constructor, Destructors, Static data members, when constructor and destructors are executed | 13 | T1 chapter 12 |
| scope resolution operator. Nested classes, local classes, passing objects to functions | 14 | T1 chapter 12 |
| returning objects, this pointer | 15 | T1 chapter 12 |
| returning objects, this pointer | 16 | T1 chapter 12 |
| **Revision** |  |  |  |
| **AAT 1** |  |  |  |
| **Module III**  **Inheritance:** | Base Class, Inheritance | 17 | T1 chapter 16 |
| Types of inheritance and protected members | 18 | T1 chapter 16 |
| protected base class inheritance | 19 | T1 chapter 16 |
| inheriting multiple base classes | 20 | T1 chapter 16 |
| Constructors, Destructors and inheritance | 21 | T1 chapter 16 |
| Passing parameters to base class constructors | 22 | T1 chapter 16 |
| Granting access | 23 | T1 chapter 16 |
| Virtual base classes | 24 | T1 chapter 16 |
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| **Module IV**  **Virtual functions, Polymorphism and Operator overloading** | Operator over loading basics, creating a member operator function | 25 | T1 chapter 15 |
| Operator overloading using friend functions such as +, - , pre-increment, post-increment, etc | 26 | T1 chapter 15 |
| overloading << and >> | 27 | T1 chapter 15 |
| Virtual function, calling a Virtual function through a base class reference | 28 | T1 chapter 17 |
| Virtual attribute is inherited | 29 | T1 chapter 17 |
| Virtual functions are hierarchical | 30 |  |
| pure virtual functions | 31 | T1 chapter 17 |
| Abstract classes, Using virtual functions, Early and late binding | 32 | T1 chapter 17 |
| **Revision** |  |  |  |
| **AAT2** |  |  |  |
| **Module V**  **Streams and Working with files** | C++ streams and stream classes | 33 | T1 chapter 21 |
| formatted and unformatted I/O operations | 34 | T1 chapter 21 |
| Output with manipulators | 35 | T1 chapter 21 |
| Classes for file stream operations | 36 | T1 chapter 21 |
| opening and closing a file | 37 | T1 chapter 21 |
| opening and closing a file | 38 | T1 chapter 21 |
| EOF | 39, 40 | T1 chapter 21 |
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Evaluation Scheme:

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| --- | --- | --- | --- |
| **Component** | **Duration** | **Weightage** | **Date (Time)** |
| **CIE 1** | 90 min | 20% | 29/9/2020 |
| **CIE 2** | 90 min | 20% | 07/11/2020 |
| **AIT 1** | 2 days | 5% | 29/9/2020 |
| **AIT 2** | 2 days | 5% | 07/11/2020 |
| **Make up CIE** | 90 min |  | 26/11/2020 |
| **SEE** | 180 min | 50% | 14/12/2020 |
| **Make up SEE** | 180 min |  | 16/01/2021 |
| **Total** |  | 100% |  |

**Notices:** All notices will be displayed on NCET and in Department website.

**Chamber Consultation Hour:** Tuesday 2:00Pm to 4:00 Pm

**Makeup Policy:** To be granted only in case of serious illness or emergency.

**Email Policy:** Communication through email. If you want to discuss anything, you are most welcome to meet me during chamber consultation hours or immediately after the class. Academic queries/doubts can be posted in Moodle.

Mr. Kasetty Ram babu

**Course-in-charge**